

Cominco Alaska Incorporated/Red Dog Mine/P.O. Box 1230/Kotzebue, Alaska 99752/Tel. (907) 426-2170



A Subsidiary of Cominco American Incorporated

Mr. Chuck Clark, Regional Administrator
United States Environmental Protection Agency Region 10
1200 Sixth Avenue
Seattle, Washington 98101

Dear Mr. Clark:

Thank you for meeting with Doug Horswill and me on November 23, 1999 to discuss air permitting issues at Cominco's Red Dog mine. We sincerely appreciate your willingness to help resolve the remaining differences that have developed between the state of Alaska and EPA over the state's Best Available Control Technology (BACT) determination. Alaska decided that a technology known as Low NOx is BACT for two of the diesel-fired reciprocating engines used to generate power at the mine, and that selective catalytic reduction (SCR) is not.

You asked us to furnish to you the economic information we alluded to during our meeting supporting the state's BACT decision, and Cominco's strong belief that SCR is not BACT for the diesel engines. This letter provides that information. Also because BACT analysis consider and weigh energy, environmental, and economic impacts and other costs, we have briefly summarized the information on those factors, in order to help you make a judgment on whether Alaska's decision is "clearly erroneous," as it must be for EPA to appeal it.

Economic Considerations.

1. **What is EPA's Own Economic Standard for BACT Determinations?** The standard EPA has applied in determining cost effectiveness in most cases is that spelled out by EPA's Appeals Board, namely that the cost is "either within or outside the range of costs being borne by similar sources under recent BACT determinations." *In Re Interpower of New York, Inc. PSD Appeals Nos. 92-8, 92-9*, (March 6, 1994) at page 23. EPA's draft New Source Review Workshop Manual (1990) (draft NSR Manual) states that in order to justify rejection of an alternative such as SCR:

"... the applicant should demonstrate to the satisfaction of the permitting agency that costs of pollutant removal (e.g., dollars per total ton removed) for the control alternative are disproportionately high when compared to the cost of control for the pollutant in recent determinations."

Draft NSR Manual at 45.

2. Applying EPA's Cost-Effectiveness Standard. Based on our thorough review of EPA's RACT/BACT/LAER clearinghouse (see table of all recent RACT/BACT/LAER determinations for diesel-fired reciprocating engines attached as Attachment A), and Freedom of Information Act inquiries to states indicated, we find that EPA has not required SCR as BACT on a diesel-fired reciprocating engine in any case, nor has any state. These include several cases where the cost per ton of NOx reduction for SCR would have been less than they would be at Red Dog, and where the resulting public exposure to NOx was far greater than that projected at Red Dog.

a. Costs Borne by Similar Sources in Similar Circumstances in Recent Determinations. Diesel-fired reciprocating engines in the cities of Saint Paul (1996), Unalaska (1996), Ketchikan (1999, limited operation), and Nome (draft 1999), all in Alaska, and probably more similar than the other BACT determinations listed, have received recent Best Available Control Technology determinations that considered and rejected SCR, and required less control than provided by the Low NOx technology being required by the state for Red Dog. Even under the far more stringent requirement applicable in nonattainment areas exceeding the health standard, namely, Lowest Achievable Emission Rate (LAER), the most recent determination in California did not require SCR (Tracy Material Recovery Plant, 1997). The only cases in which SCR has been required on such engines are not BACT determinations, but LAER determinations (Philadelphia NE Water Treatment Plant, 1992, ozone nonattainment area (NOx a precursor of ozone)) and (Ross Island Sand and Gravel, CA, 1996) where the health damage to which the NOx emissions contributed justified the disproportionate expense and other adverse environmental risks of SCR. In summary, there are no similar sources in similar circumstances in recent determinations that have been required to bear the disproportionate costs of SCR.

Even if one considers the costs borne by dissimilar sources in circumstances more favorable for operation of SCR than at Red Dog, SCR has been rejected as BACT. That is true of the Northstar PSD permit for combustion turbines on the North Slope (1999). It is also true for two 20 megawatt combustion turbine generators in Hawaii, where EPA upheld the state of Hawaii's rejection of SCR based on its determination that SCR was "not fully demonstrated for long-term operations on combustion turbine generators operating in simple cycle mode." *In Re: Maul Elec. Co.*, 1998 WL 666709, PSD Appeal No. 98-2 (EAB 1998).

There have been several other appeals, by EPA Regions and others, of determinations by states that SCR was not required. In every one of those cases, the state has been upheld. *In the Matter of Old Dominion Elec. Coop.*, 1992 WL 92372, PSD App. No. 91-39 (EAB 1992), *In the Matter of: Hawaiian Commercial and Sugar Co.*, 1992 WL 191948, PSD App. No. 92-1 (EAB 1992), *In the Matter of: Mecklenburg Cogeneration Ltd. Partnership* 1990 EPA App. Lexis 42, PSD App. No. 90-7 (EAB 1990). In one of these cases that appealed a determination by the state of Virginia that SCR was not BACT, the Administrator of EPA stated that:

Even though EPA Region III, for example, might well have arrived at a different determination had it been the permit issuer of record, the Petitioners have not persuaded me that the State's choice represents clear error, because the evidence "for" and "against" SCR was . . . in such close balance.

In the Matter of Old Dominion Electric Cooperative, 1992 WL 92372, PSD Appeal No. 91-39 (EAB, July 20, 1992).

In the only case we have been able to find where EPA disagreed with a state on what constituted BACT (EPA preferred water injection, the state found "operation by design" to be BACT), and issued a section 167 order, the court found that EPA did not have authority to issue a section 167 order collaterally attacking the permit, *U.S. v. Solar Turbines*, 732 F. Supp. 535 (M.D.Pa. 1989).

b. Rejection of SCR and Other Technologies Due to High Cost. Cominco has demonstrated that at Red Dog the cost per ton of NO_x removed for SCR would be \$5,640. This cost includes the real world cost of an arctic installation, supplemental boiler, and production lost due to shutdown during installation. Even without including these substantial costs, Alaska determined that SCR would cost \$2100 per ton of NO_x removed for new engine MG-17. This includes a total installed capital cost of SCR that is nearly 10 times that for low NO_x and a total annualized cost of SCR more than 12 times the total annualized cost for Low NO_x. For MG-17, therefore, SCR has an additional cost per year of over \$1 million more than Low NO_x. With an expected mine life of at least 40 more years, these costs are very significant, substantially affecting Cominco's cost of production. The costs borne by other sources, included those enumerated above, are a small fraction of these costs.

EPA has also upheld challenges to the rejection of SCR as BACT due to its high cost. For instance, in a 1997 BACT case, the EPA Environmental Appeals Board held that petitioners failed to demonstrate that Virginia's finding of \$8,500 per ton of NO_x removed was within the range of control costs borne by similar sources. *In re Commonwealth Chesapeake Corp.*, 1997 WL 94742, PSD Permit App. Nos. 96-2 through 96-5 (EAB 1997). Similarly, in a Reasonably Available Control Technology case (not BACT, but economically similar, requiring a control technology that is "reasonably available considering technological and economical feasibility"), the Washington Pollution Control Board found that costs for SCR between \$1,186 and \$1,837 per ton of NO_x removed were not cost-effective and did not represent an "economically feasible" control technology, and that instead Low NO_x technology costing approximately \$112 to \$233 per ton of NO_x removed should be installed on a large coal-fired generating plant. *Bowers v. Southwest Air Pollution Control Authority*, 1999 WL 198964, Washington Pollution Control Board, Nos. 98-3 and 31, 1999). Likewise, EPA's EAB rejected costs between \$4,000 and \$6,000 per ton of SO₂ removed as not cost-effective. *In Re: Inter-Power of New York, Inc.*, 1994 EPA App. Lexis 33, PSD App. Nos. 92-8 and 92-9 (EAB 1994).

Cominco submits that this information on economic costs establishes that (1) that no similar sources have borne the costs of SCR in recent determinations, and (2) that the cost of SCR is disproportionate to costs borne by similar sources in recent determinations. More importantly, this information demonstrates conclusively that Alaska's BACT determination of Low NO_x as BACT at Red Dog is reasonable and not clear error that would justify EPA intervention.

Environmental Impacts of SCR and the Low NO_x Modification.

The difference in total environmental impacts of NO_x emissions predicted from Low NO_x rather than SCR as BACT on two engines at Red Dog is the virtually insignificant amount of 1.6 micrograms per cubic meter (µg/m³). For one engine, the impact would be approximately half that amount, and thus below

EPA's de minimus impact levels. No public presence or residence exists within tens of miles of the Red Dog mine.

However, SCR requires the use of ammonia. A real risk, however small, exists for an ammonia release and worker exposure from the use of SCR at the Red Dog mine. Ammonia can cause serious injury or death. OSHA statistics show that the storage, use and handling of ammonia results in hundred of industrial accidents every year. At the Red Dog mine, that risk would be presented immediately adjacent to the residential quarters, under severe arctic conditions, in a remote area. In the case of *Blackhills Power and Light Co.*, 1993 WL 474540, the Wyoming Department of Environmental Quality rejected SCR in part for its adverse environmental risks, including "the danger to personal safety in delivering, storing and using ammonia (NH₃) onsite, the creation of sulfuric acid mist, the problem in disposing of the catalyst of an SCR system, which is a hazardous material, excessive ammonia slip, [and] ammonia odor, ..." (Docket No. 2476-93, 1993).

Energy Impacts.

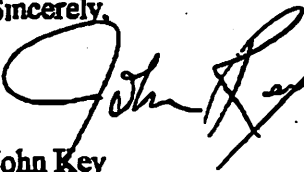
For each unit on which SCR was installed, Cominco would be required to burn up to 531,730 gallons per year of additional diesel fuel to replace the waste heat unit loss caused by installing SCR rather than utilizing that waste heat. It would also be required to haul that amount of additional fuel from the Red Dog port by truck, creating additional emissions that would not be released if Low NO_x were determined to be BACT.

Conclusion.

Taken together, we hope that you will agree that there are sufficient economic, environmental and energy bases in the case of Red Dog's PRI PSD air permit for the state of Alaska to reject SCR as BACT, and to require Low NO_x. In view of the information presented, we also hope you will concur that there is no further need for disagreement, controversy, or dispute resolution, and that Cominco may proceed on the long-delayed permit for Red Dog's much-needed and beneficial Production Rate Increase.

Please let us know if you have any questions or if we can provide further information to assist you in your determination.

Sincerely,



John Key

cc: Michele Brown, ADEC
Tom Chapple, ADEC
Chuck Findley, EPA Region 10
Doug Horswill, Cominco